



[After Davidson and Nougaret, U.S. Department of Agriculture.]

The grape phylloxera. 1a—Root galls. 1b—Gall enlarged. 1c—Adult magnified. 1d—Side view of the insect showing proboscis used for sucking sap. 2a—Infested portion of small root. 2b—Normal root. 3—Large root showing insect and eggs in situ.

at intervals of every 2 weeks until grapes start to turn colour. In most cases no further spraying is required. For wine-making varieties it is an advantage to protect the bunches from botrytis rot, if humid, wet weather occurs before the berries are properly matured, by applying a late 1:150 lime-sulphur spray, unless, of course, serious splitting of the fruit makes immediate harvesting necessary.

- (b) For control of caterpillars and other insects also include in the Bordeaux spray $\frac{1}{2}$ lb. of arsenate of lead per 100 gallons or 1 lb. of 50 per cent. wettable D.D.T. ($\frac{1}{2}$ lb. of actual D.D.T.) as previously directed.
3. Between sprays dust with sulphur, choosing clear, warm, still weather for the operation.

Usually from 4 to 6 applications of sulphur are required for effective control of oidium if conditions are favourable for the development of this disease.

A modification which simplifies the disease-control programme and which has given good results consists of alternating lime-sulphur 1:180 with the Bordeaux and eliminating the sulphur dustings. Sprays are applied at 2-weekly intervals.

Preparation of Bordeaux Mixture

As the strength of Bordeaux mixture is varied extensively, a recom-

mendation for this spray usually includes the recipe. The weight of copper sulphate (bluestone) is indicated

European Wasp will Attack Grapes

The European wasp (*Vespula germanica*), an unwelcome immigrant of recent years, was first reported in the Waikato district and has spread until the area where wasps have been recorded extends from north of Auckland to Taranaki. The wasps form a nest in the ground and the community consists of workers, queens, and males. Throughout spring and early summer their main food consists of other insects, but later they may feed on the sweet juice of a variety of fruits, including grapes.

So far only a few isolated instances of minor damage to grapes have been recorded in New Zealand, as the wasp is not present in large numbers in the commercial grape-growing areas.

To control the spread of the pest wasp nests must be found and destroyed by land occupiers. A free supply of chemical powder for destroying nests is available this season from offices of the Department of Agriculture.

in pounds by the first figure, the weight of hydrated lime or quicklime in pounds by the second, and the volume of water in gallons by the last figure. Thus Bordeaux 5:4:50 = 5 lb. of copper sulphate, 4 lb. of lime, and 50 gallons of water.

It is most convenient to use stock solutions of copper sulphate and lime



[After Slingerland and Crosby.]
Phylloxera galls on the under side of a vine leaf.